

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
14 April 2005 (14.04.2005)

PCT

(10) International Publication Number  
**WO 2005/032595 A3**

(51) International Patent Classification<sup>7</sup>: **A61K 31/00**,  
31/7088, 48/00, G01N 33/68, 33/50

(21) International Application Number:  
PCT/US2004/012799

(22) International Filing Date: 23 April 2004 (23.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/465,014 23 April 2003 (23.04.2003) US

(71) Applicant (for all designated States except US):  
**GEORGETOWN UNIVERSITY** [US/US]; Office  
of Technology Licensing, Harris Building, Suite 101, 3300  
Whitehaven Street, NW, Washington, DC 20007 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **NEVALAINEN,**  
**Marja, T.** [FI/US]; 7212 Farr Street, Annandale, VA  
22003 (US).

(74) Agents: **EHRHARD, Kathleen, N. et al.**; Ropes & Gray  
LLP, One International Place, Boston, MA 02110-2624  
(US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-  
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,  
GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,  
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the international search report:  
1 December 2005

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND COMPOSITIONS FOR THE INHIBITION OF STAT5 IN PROSTATE CANCER CELLS

(57) Abstract: The present invention relates to compositions and methods for the treatment of prostate cancer. In certain embodiments, the invention relates to compositions and methods for the inhibition of prostate cancer cell growth, comprising inhibiting the activity of Stat5 in prostate cancer cells.

WO 2005/032595 A3

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US2004/012799

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K31/00 A61K31/7088 A61K48/00 G01N33/68 G01N33/50

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 03/026641 A (UNIVERSITY OF NOTTINGHAM; SHAW, PETER; PRITCHARD, DAVI; LI, LI; PRITCH) 3 April 2003 (2003-04-03)</p> <p>claims 4,12</p> <p>-----</p>	<p>1-3; 15-17, 21-24; 27-29, 41-43, 47,50, 53,54</p>

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

19 July 2005

Date of mailing of the international search report

13. 10. 2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Schwachtgen, J-L

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2004/012799

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
  - a. type of material
    - ☒ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material
    - ☒ in written format
    - ☒ in computer readable form
  - c. time of filing/furnishing
    - ☒ contained in the international application as filed
    - ☐ filed together with the international application in computer readable form
    - ☒ furnished subsequently to this Authority for the purpose of search
2. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/012799

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-3, 15-17, 21-24, 27-29, 41-43, 47, 50, 53, 54 (partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claims 1-24 and 27-47 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Although claims 25-26, 48, 49, 51 and 52 are directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3, 15-17, 21-24, 27-29, 41-43, 47, 50, 53, 54  
(partially)

A method of inhibiting prostate cancer cell growth, comprising inhibiting Stat5 activity in the prostate cancer cells, wherein the inhibitor is a small molecule.

---

2. claims: 7-14, 33-40 (totally); 1-3, 15-17, 21-24, 27-29, 41-43, 47, 50, 53, 54 (partially)

A method of inhibiting prostate cancer cell growth, comprising inhibiting Stat5 activity in the prostate cancer cells, wherein the inhibitor is an siRNA construct or an antisense construct against Stat5.

---

3. claims: 19, 20, 45, 46 (totally); 1-3, 15-17, 21-24, 27-29, 41-43, 47, 50, 53, 54 (partially)

A method of inhibiting prostate cancer cell growth, comprising inhibiting Stat5 activity in the prostate cancer cells, wherein the inhibitor is an antibody against the prolactin receptor.

---

4. claims: 4-6, 30-32 (completely); 1-3, 15-17, 21-24, 27-29, 41-43, 47, 50, 53, 54 (partially)

A method of inhibiting prostate cancer cell growth, comprising inhibiting Stat5 activity in the prostate cancer cells, wherein the inhibitor is a nucleic acid, which encodes a protein that has dominant-negative Stat5 function.

---

5. claims: 18, 44 (totally); 1-3, 15-17, 21-24, 27-29, 41-43, 47, 50, 53, 54 (partially)

A method of inhibiting prostate cancer cell growth, comprising inhibiting Stat5 activity in the prostate cancer cells, wherein the inhibitor is a nucleic acid, which encodes a protein that has dominant-negative Jak2 function.

---

6. claims: 25, 26, 48, 49, 51, 52 (totally)

A method of diagnosing or aiding in the diagnosis of prostate cancer in a male, comprising obtaining a sample of prostate tissue from a male and determining whether activated Stat5 is present in cells of the prostate tissue sample.

---

### Information on patent family members

PCT/US2004/012799

.....